

R E M A R K S

New claims 37-40 are added. Re-examination and reconsideration are requested.

In the final office action, paper number (unspecified), dated March 22, 2005, for the parent application, the examiner rejected claims 20-24 and 26-28 under 35 U.S.C. §112, first and second paragraphs for the reasons specified in sections 2 and 3 of the office action. The examiner rejected claims 1-3, 5, 7, 8, 20-24, 26-28, and 30-36 under 35 U.S.C. §103(a) as being obvious over various combinations of Akers, et al., U.S. Patent No. 6,178,218B1 (Akers); Richard B. Firestone, "The Berkeley Laboratory Isotopes Project, Exploring the Table of Isotopes" (Firestone); Obermayer, U.S. Patent No. 3,662,882 (Obermayer); Miller, U.S. Patent No. 4,980,901 (Miller); Gedcke, ORTEC AN 59, "How Counting Statistics Controls Detection Limits and Peak Precision (Gedcke); Simon Fraser University, Radiation Safety Office, Radiation Counting Statistics (Simon Fraser University); and Szeles et al., "Positron-Annihilation Spectroscopy" (Szeles), as detailed in Sections 4-8 of the office action.

Applicant believes that none of the currently-pending claims are obvious over the cited references and respectfully traverses the examiner's rejections for the reasons that will be set forth below.

Argument:

Re the Section 112 rejections:

The examiner rejected claims 20-24 and 26-28 under 35 U.S.C. §112, first and second paragraphs for the reasons set forth in sections 2 and 3 of the office actions. Because these rejections are identical to rejections reversed by the Board of Patent Appeals and Interferences on May 31, 2005, for the divisional application (serial no. 10/269,807), the rejections of these claims will not be addressed further herein. Claims 20-24 and 26-28 are thus allowable in light of Section 112, first and second paragraphs.

Re the Rejections of claims 1, 5, and 8:

The examiner rejected claims 1, 5, and 8 under Section 103(a) as being unpatentable over Akers in view of Firestone or, in the alternative, Akers in view of Firestone and Obermayer. These rejections fail because none of the references provides the suggestion or incentive required to combine them in the manner urged by the examiner. Therefore, the examiner has failed to establish the required prima-facie case of obviousness of claims 1, 5, and 8.

The Akers reference discloses methods and apparatus relating to non-destructive examination utilizing neutron activated positron annihilation. The Firestone reference merely indicates that ^{62}Cu may be produced by a charged particle reaction, a photon reaction, or by fast neutron activation. However, the Firestone reference does not teach or suggest how ^{62}Cu may be used for any purpose, much less how ^{62}Cu may be used in non-destructive testing apparatus in the manner defined by the pending claims. Instead, the examiner's rejections are based on the mere conclusion that because Firestone discloses that ^{62}Cu may be formed or produced by a photon reaction, that it would be obvious to modify the apparatus, as disclosed by Akers by the teaching of Firestone. This is not the test for obviousness under Section 103.

The test for obviousness is not whether the various elements of the claim can be found in the prior art, but whether the prior art provides some suggestion, incentive, or motivation to a person having ordinary skill in the art to combine those elements make the claimed combination. See, for example, In re Rouffet, 47 USPQ2d 1453 (Fed. Cir. 1998). The examiner can satisfy the burden of showing obviousness "only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references." In re Lee, 61 USPQ2d 1430, 1434 (Fed. Cir. 2002). This the examiner has not done.

The examiner has failed to identify any objective teachings in either Akers or Firestone that would lead an individual to combine the relevant teachings in the manner required by the rejected claims. Indeed, it is impossible to do so because
5 Firestone is completely silent as to any possible uses of ^{62}Cu . While the Akers reference does disclose the use of ^{62}Cu , Akers forms the ^{62}Cu by neutron activation. Therefore, there is no need in Akers, thus no suggestion or incentive, to substitute neutron activation for photon activation. While the present
10 invention does suggest the use of photon activation to form ^{62}Cu , it is well-established law that the teachings of an invention cannot be used a blueprint or guide to pick and choose from among the references only those aspects contained in the invention without regard to what each reference fairly teaches to persons
15 having ordinary skill in the art. This is what the examiner has done. That is, armed with the teachings of the present invention, the examiner has searched the references for the various elements and limitations recited in the pending claims in a misplaced attempt to establish the obviousness of the
20 pending claims. However, what counts is the objective teachings of the references. Here, there are no objective teachings in the references that would lead a person having ordinary skill in the art to combine the teachings of the references.

The situation is similar with respect to the Obermayer
25 reference. First, it should be noted that the teachings of Obermayer are directed to methods and apparatus for quality control of explosive primers by characteristic X-ray emission. Therefore, they are of limited relevance to the present invention. While it is true that Obermayer discusses in the
30 background section, e.g., generally at col. 1, lines 55, that certain prior art methods of tagging the primer material by neutron activation of the primer have the "disadvantage that the primer itself or the surrounding container remains radioactive for a long period of time," this teaching fails to provide the
35 suggestion or incentive to modify the neutron activation

5 teachings of the Akers patent with photon activation. That is, Akers is not concerned with problems of leaving explosive primers radioactive of a long period of time. Indeed, it is the preference of Akers for the specimen to remain radioactive for some period of time so that annihilation gamma rays can be collected.

10 Significantly, Obermayer does not teach that photon radiation is more advantageous than neutron activation in any other circumstance except that neutron activation leaves explosive primers radioactive for a long period of time. Thus, a person having ordinary skill in the art would not view Obermayer as having any applicability to the field of non-destructive testing, much less find within Obermayer the incentive to replace the neutron activation method of Akers with photon activation.

15 Put another way, Obermayer is cumulative of Firestone in that both references recognize that certain materials may be made radioactive by both photons and neutrons. However, what is missing from both references is any teaching in the references that would lead a person having ordinary skill in the art to modify Akers by replacing neutron activation with photon activation.

20 The mere fact that certain of the claimed elements may be found in the prior art is not sufficient under the test set forth in In re Rouffet, supra, at 1457:

25 "[V]irtually all [inventions] are combinations of old elements. Environmental Designs, Ltd. V. Union Oil Co., 713 F.2d 693, 698, 218 USPQ 865, 870 (Fed.Cir. 1983) ("Most, if not all, inventions are combinations and mostly of old elements."). Therefore an examiner may often find every element of a claimed invention in the prior art. If identification of each claimed element in the prior art were sufficient to negate patentability, very few patents would ever issue. Furthermore, rejecting patents solely by finding prior art corollaries for the claimed elements would permit an examiner to use the claimed invention itself as a blueprint for piecing together elements in the prior

art to defeat the patentability of the claimed invention. Such an approach would be "an illogical and inappropriate process by which to determine patentability." Sensonics, Inc. v. Aerosonic Corp., 81 F.3d 1566, 1570, 38 USPQ2d 1551, 1554 (Fed.Cir. 1996)."

Because Akers, Firestone, and Obermayer fail to provide any teachings that would lead a person having ordinary skill in the art to combine them so as to create the non-destructive testing apparatus of claim 1, the examiner failed to establish the required *prima-facie* case of obviousness of claim 1. Therefore, claim 1 is allowable. Claim 5 is also allowable in that it includes at least the limitations of claim 1, which is allowable.

Independent claim 8 is allowable for the same reasons expressed above for claim 1. That is, the examiner has failed to establish the required *prima-facie* case of obviousness of claim 8 by failing to identify any objective teaching in Akers, Firestone, or Obermayer that would lead a person having ordinary skill in the art to combine the references in the manner required by claim 8.

Re the Rejections of Claims 2 and 3:

Claims 2 and 3 stand rejected under Section 103(a) as being obvious over either of the combinations of Akers, Firestone, and Obermayer further in view of Miller. These rejections are improper in that none of the references provide the suggestion or incentive to combine them in a manner that would make obvious claims 2 and 3. Consequently, the Patent Office has failed to establish the required *prima-facie* case of obviousness of claims 2 and 3.

As argued above for Akers, Firestone, and Obermayer, none of these references contain the suggestion or incentive required to combine them. While Miller discloses a device for detecting the presence of explosive materials, such as nitrogen, that involves using gamma rays to activate nitrogen atoms in the specimen, the Miller reference contains no teachings that would

lead a person having ordinary skill in the art and with no knowledge of the present invention to combine it with the other references.

5 The examiner's rejections of claims 2 and 3 are improperly based on hindsight reconstruction, and involve nothing more than a picking and choosing from among the various references only those elements presented in the claims, without regard to what the references fairly teach. The examiner attempt to use Akers for the proposition of a certain type of non-destructive testing
10 system. He then uses either Firestone or Obermayer for the proposition that certain materials may be activated by photons. The examiner then uses Miller for the proposition that accelerators can be used to produce photons. However, the examiner has not identified any teachings in any of the
15 references that would motivate a person having ordinary skill in the art to pick and choose from among the various references only those portions contained in the pending claims. Because the examiner has not identified any such teachings, the rejections are improperly based on hindsight reasoning. Consequently, the
20 rejections of claims 2 and 3 are improper and must be withdrawn.

Re the Rejections of Claim 7:

Claim 7 stands rejected under Section 103(a) as being obvious over either one of the combination of Akers and Firestone or Akers, Firestone, and Obermayer. This rejection is improper
25 for the same reasons expressed above for claims 1, 5, and 8. That is, none of the references, taken alone or together, provides the suggestion or incentive required to combine them in the manner required by claim 7. More specifically, claim 7 is allowable because it depends from claim 1, which is allowable.

30 Re the Rejections of Claims 20-24 and 31:

Claims 20-24 and 31 stand rejected under 35 U.S.C. §103(a) as obvious over either of the combinations of Akers with Firestone or Akers with Firestone and Obermayer; both further in

view of either one of the webpages of Gedcke or Simon Fraser University, and/or as a matter of optimization.

5 The rejections of claims 20-24 are improper in that none of the references, taken alone or in combination, discloses either a normal activation/analysis process or a rapid activation/analysis process as specifically set forth in claim 20. Therefore, even if it were proper to combine the various references, which it is not, the resulting device would still fail to include a data processing system that operates in accordance with the normal and rapid activation/analysis processes as specifically required by claim 20. Consequently, the obviousness rejections of claim 20 are improper and must be removed.

15 Claims 21-24 are allowable in that they depend from claim 20, which is allowable. In addition, claim 21 is independently allowable in that the examiner failed to identify any objective teachings in any of the references that disclose or suggest the additional limitations of claim 21 "wherein said data processing system includes a positron lifetime algorithm, said positron lifetime algorithm processing raw data indicative of a positron formation event to produce output data indicative of a changing presence or absence of a lattice defect."

25 Claim 22 is independently allowable in that there has not been identified any objective teachings in any of the references that suggest the additional limitations hereof further including "a second detector" and "wherein said data processing system includes a positron lifetime algorithm, said positron lifetime algorithm processing data indicative of a positron formation event to produce output data indicative of a changing presence or absence of a lattice defect."

30 Claim 23 is independently allowable in that the examiner failed to identify any objective teachings in any of the references that suggest the additional limitations of claim 23 "wherein said data processing system includes a selective activation algorithm, said selective activation algorithm

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responsive to a user input, said selective activation algorithm operating said photon source to produce photons having the predetermined energies in response to the user input."

5 Claim 24 is independently allowable in that the examiner failed to identify any objective teachings in any of the references that disclose or suggest the additional limitations of claim 24 "wherein said data processing system includes a three-dimensional imaging algorithm, said three-dimensional
10 imaging algorithm processing raw data indicative of a positron annihilation event to produce output data indicative of a location of the presence or absence of a lattice defect."

The rejection of claim 31 is improper in that the examiner has failed to establish the required *prima-facie* case of obviousness of claim 31 by failing to identify any objective
15 teaching in either Firestone or Akers that would lead a person having ordinary skill in the art to combine the references in the manner required by claim 31. The mere conclusory statements offered by the examiner are not enough. That is, the references fail to disclose or suggest the non-destructive testing apparatus
20 of claim 31 comprising "a photon source for producing photons having a predetermined energy. . . the photons. . .resulting in the creation of positrons within the specimen. . ." as well as a "Doppler broadening processor" that produces "output data indicative of the presence or absence of a lattice defect in the
25 specimen being tested." Again, merely picking and choosing from among the references certain of these elements amounts to nothing more than hindsight reconstruction and cannot form the basis for a valid obviousness rejection under Section 103.

Applicant further notes that these rejections remain in
30 error regardless the alleged "notorious scientific principle" about accuracy and precision (office action of 9-27-2004, page 12, lines 10-12, 16-17, and page 13, lines 5-6 ("because such modification is no more than the use of notorious scientific principles in the optimization of the process"). Rather,
35 Applicant points to MPEP 2144.02 and 2144.03 where the

appropriate process for dealing with so-called "notorious scientific principles" is set forth. Most specifically, Applicant notes that the Administrative Procedures Act as described in MPEP 2144.03 does not allow reliance hereon without evidentiary support: "[i]t is never appropriate to rely solely on common knowledge in the art without evidentiary support in the record as the principal evidence upon which a rejection was based. See In re Zurko, 258 F.3d 1379, 59 USPQ2d 1693 (Fed. Cir. 2001); and In re Ahlert, 424 F.2d 1088, 165 USPQ 418 (CCPA 1970). MPEP 2144.02 also requires evidentiary support. The examiner must therefore produce evidence of the principle even if it is but an affidavit of personal knowledge under 37 CFR 1.104(d)(2). Thus, even if true, the examiner's unsupported reliance upon such a principle without evidentiary support is improper. Rejections based hereon are thus in error and must be withdrawn.

Re the Rejections of Claims 26-28 and 30-36:

The examiner rejected claims 26-28 and 30-36 under 35 U.S.C. §103(a) as obvious over either of the combinations of Akers with Firestone or Akers with Firestone and Obermayer; both further in view of the Szeles.

These rejections are improper in that none of the references provide the suggestion or incentive to combine them in the manner required by the pending claims. With regard to Akers, Firestone, and Obermayer, applicant specifically incorporates the points and arguments set forth above with regard to the rejections of claims 1, 5, and 8. While the Szeles references teaches algorithms (such as Doppler broadening and positron lifetime), such a fact alone does not provide the suggestion or motivation necessary to make all of the modifications or combinations to reach the entirety of the apparatus of claim 26. This rejection is thus in error. In addition, the examiner has failed to identify any objective teachings in any of the references that disclose or suggest the additional limitations of claim 26 "means for alternately activating the positron emitter within the specimen

being tested and detecting a positron annihilation event." Again, the references simply fail to disclose or even suggest such a means. Therefore, claim 26, and the claims depending therefrom (i.e., claims 27, 28, and 30) are also allowable.

5 In addition, claim 27 is independently allowable in that the examiner failed to identify any objective teachings in any of the references that disclose or suggest the additional limitations of claim 27 "wherein said data processing means process raw data indicative of the positron formation event in accordance with a
10 positron lifetime algorithm to produce output data indicative of a changing presence or absence of a lattice defect."

Claim 28 is independently allowable in that the examiner failed to identify any objective teachings in any of the references that disclose or suggest the additional limitations
15 of claim 28 "further comprising second detector means" and "wherein said data processing means processes raw data indicative of the positron formation event in accordance with a positron lifetime algorithm to produce output data indicative of a changing presence or absence of a lattice defect."

20 Claim 30 is independently allowable in that the examiner failed to identify any objective teachings in any of the references that disclose or suggest the additional limitations of claim 30 "wherein said means for alternately activating. .
25 .comprises means for moving the specimen being tested between an activation position and a detection position."

Independent claim 31 is allowable for the same reasons expressed above for claim 20. That is, the examiner has failed to establish the required *prima-facie* case of obviousness of claim 31 by failing to identify any objective teaching in either
30 Firestone or Akers that would lead a person having ordinary skill in the art to combine the references in the manner required by claim 31. The mere conclusory statements offered by the examiner are not enough. That is, the references fail to disclose or suggest the non-destructive testing apparatus of claim 31
35 comprising "a photon source for producing photons having a

predetermined energy. . . the photons. . .resulting in the creation of positrons within the specimen. . ." as well as a "Doppler broadening processor" that produces "output data indicative of the presence or absence of a lattice defect in the specimen being tested." Again, merely picking and choosing from among the references certain of these elements amounts to nothing more than hindsight reconstruction and cannot form the basis for a valid obviousness rejection under Section 103.

The Szeles article has no further bearing on the allowability of claim 31. Though Szeles teaches algorithms (such as Doppler broadening and positron lifetime), such a fact alone does not provide the suggestion or motivation necessary to make all of the modifications or combinations to reach the entirety of the apparatus of claim 31. This rejection is thus in error and can thus be withdrawn. Consequently, claim 31, and the claims depending therefrom (i.e., claims 32 and 33) are allowable.

In addition, claim 32 is independently allowable in that the examiner failed to identify any objective teachings in any of the references that suggest the additional limitations of claim 32 "further comprising three-dimensional imaging apparatus operatively associated with said detector and responsive to the raw data produced thereby, said three-dimensional imaging apparatus producing output data indicative of a location of the presence or absence of a lattice defect."

Claim 33 is independently allowable in that the examiner failed to identify any objective teachings in any of the references that disclose or suggest the additional limitations of claim 33 "further comprising a positron lifetime processor operatively associated with said detector and responsive to the raw data produced thereby, said positron lifetime processor producing output data. . .indicative of a changing presence or absence of a lattice defect."

Independent claim 34 is independently allowable in that the examiner failed to identify any objective teachings in any of the

references that disclose or suggest the additional limitations of claim 34 "a positron lifetime processor operatively associated with said detector. . . , said positron lifetime processor producing output data. . . indicative of a changing presence or absence of a lattice defect." Simply finding these elements, or corollaries for these elements, cannot form the basis for an obviousness rejection under *In re Rouffet, supra*. Thus, claim 34, and the claim depending therefrom (i.e., claim 35) are allowable.

In addition, claim 35 is independently allowable in that the examiner failed to identify any objective teachings in any of the references that disclose or suggest the additional limitations of claim 35 "further comprising three-dimensional imaging apparatus operatively associated with said detector and responsive to the raw data produced thereby, said three-dimensional imaging apparatus producing output indicative of a location of the presence or absence of a lattice defect."

Independent claim 36 is allowable for the same reasons expressed above for claim 20. That is, the examiner has failed to establish the required *prima-facie* case of obviousness of claim 36 by failing to identify any objective teaching in either Firestone or Akers that would lead a person having ordinary skill in the art to combine the references in the manner required by claim 36. The mere conclusory statements offered by the examiner are not enough. That is, the references fail to disclose or suggest the non-destructive testing apparatus of claim 36 comprising "a photon source for producing photons having a predetermined energy. . . the photons. . . resulting in the creation of positrons within the specimen. . ." as well as a "data processing system" that includes a "Doppler broadening algorithm" that produces "output data indicative of the presence or absence of a lattice defect in the specimen being tested." Again, merely picking and choosing from among the references certain of these elements amounts to nothing more than hindsight reconstruction and cannot form the basis for a valid obviousness

rejection under Section 103.

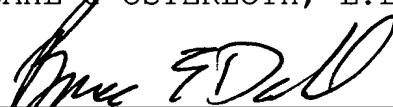
Re New Claims 37-40:

New claims 37-40 are directed to non-destructive testing apparatus having the elements and limitations expressed therein.
5 These claims are believed to be allowable for the same reasons expressed above. That is, because none of the cited references contain the teachings required to motivate a person having ordinary skill in the art to combine them in the manner required by the pending claims, none of the cited references can support
10 a *prima-facie* case of obviousness of claims 37-40.

Applicant believes that all of the claims pending in this patent application are allowable and that all other issues raised by the examiner have been rectified. Therefore, applicant respectfully requests the examiner to reconsider his rejections
15 and to grant an early allowance. If any questions or issues remain to be resolved, the examiner is requested to contact the applicant's attorney at the telephone number listed below.

Respectfully submitted,

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Date: 6-17-05